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## **NTE7008** **Integrated Circuit** **Color TV/Video, Chroma, Deflection Circuit**

**Description:**

The NTE7008 is a small-sized multifunctional IC in a 30-Lead DIP type package containing the “video, chroma, deflection” circuit of a NTSC color TV. Besides being small-sized, this device requires fewer adjustments and a reduced number of external components. The NTE7008 can be used in conjunction with the NTE1728 for “VIF-SIF” use or the NTE1773, NTE1797, NTE1855, NTE7085 for “vertical output” use to perform all color TV signal processing functions.

The polarity of the quadratic differentiation circuit input of the NTE7008 is inverted to facilitate easy connection of a Tr, L, C, R-used circuit for higher picture quality to the quadratic differentiation circuit input of the video circuit. The NTE7008 contains a wide-band video circuit (10MHz) and is suited for use in AV or large-sized sets.

**Features:**

- Wide-Band Video Circuit (10MHz)
- Small-Sized Package
- Few External Components Required
- Fewer Adjustments Required, No Adjustment of the Following Functions:
  - Chroma VCO (APC)
  - Horizontal OSC H-Hold
  - Vertical OSC H-Hold
- Multifunctional

**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Maximum Supply Voltage, $V_{16\text{max}}$ .....	14V
Maximum Supply Current, $I_{22\text{max}}$ .....	15mA
Allowable Power Dissipation ( $T_A \leq +65^\circ\text{C}$ ), $P_{d\text{max}}$ .....	1100mW
Operating Temperature Range, $T_{\text{opr}}$ .....	$-20^\circ$ to $+85^\circ\text{C}$
Storage Temperature Range, $T_{\text{stg}}$ .....	$-55^\circ$ to $+125^\circ\text{C}$

**Recommended Operating Conditions:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Recommended Supply Voltage, $V_{16}$ .....	12V
Recommended Supply Current, $I_{22}$ .....	10mA
Operating Voltage Range, $V_{16\text{op}}$ .....	9 to 14V
Operating Current Range, $I_{22\text{op}}$ .....	8.5 to 15mA

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$ ,  $V_{CC} = V_{16} = 12\text{V}$ ,  $I_{CC} = I_{22} = 10\text{mA}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Circuit Current	$I_{16}$	Quiescent	40	53	75	mA
<b>Deflection Block</b>						
Horizontal Supply Voltage	$V_{Z22}$		8.2	8.7	9.2	V
Sync Separation Input DC Level	$V_{S,S}$		9.0	9.3	9.6	V
Vertical Free-Running Frequency	$f_{V1}$		$f_H/296.5$			Hz
	$f_{V2}$		$f_H/224.5$			Hz
Vertical Blanking Pulse Width	PW V.blk		$19.25/f_H$			sec
Vertical Output Pulse Width	PW V.out		$10.25/f_H$			sec
Vertical Drive Stage Voltage Gain	$G_V$		13.0	16.2	19.0	dB
Vertical Output Pulse Start Voltage	$V_{c ds}$		–	–	4.0	V
Vertical Pull-In Start Voltage	$V_{v ps}$		–	–	4.0	V
Vertical Blanking Pulse Peak Value	$V_{V.blk}$		–	10	–	V
Horizontal Free-Running Frequency	$f_H$	Diff bet. 15.734kHz and hor. output freq.	–70	30	130	Hz
Horizontal OSC Frequency Change with Line Frequency	$\Delta f_H (V)$	$f_H (8V) - f_H (7V)$	–10	0	+10	Hz
Horizontal OSC Frequency Change with Ambient Temperature	$\Delta f_H/\Delta T$	$T_A = -10^\circ$ to $+60^\circ\text{C}$	–1.5	–	+1.5	Hz/ $^\circ\text{C}$
Horizontal Output Pulse Width	PW H.out		23.5	24.5	25.5	$\mu\text{s}$
Horizontal Sync Pull-In Range	$f_H$ pull	Deviation from 15.734kHz	$\pm 400$	–	–	Hz
Horizontal Output Pulse Start Voltage	$V_H$ pos		–	–	5.5	V
Horizontal Free-Running Frequency Secular Drift	$\Delta f_{HT}$	5 sec to 30 min after power ON	–50	–10	+30	Hz
Horizontal Blanking Threshold Level	$V_H$ blk		11	–	–	V
Horizontal Output Drive Current	$I_{H.O}$		2.0	–	4.5	mA
Horizontal OSC Control Sensitivity	$Bf_H$	Reference Value	–	236	–	Hz/ $\mu\text{s}$
Hold-Down Start Input Voltage	$V_{HD}$		0.55	0.65	0.75	V
<b>Video Block</b>						
Video Tone Voltage Gain	G tone	$f = 2\text{MHz}$ , video tone VR: 12V	7.0	9.6	12.0	dB
Video Voltage Gain	$A_V$	$f = 100\text{kHz}$ , video tone VR: 12V	12	15	18	dB
Contrast Control Center	$e_o$	$f = 100\text{kHz}$ , input: 100mV <sub>P-P</sub>	0.2	0.3	0.4	V <sub>P-P</sub>
Contrast Variable Range	$\Delta e_o$	$f = 100\text{kHz}$	16	18	20	dB
Bright Control Characteristic	BR1	Quiescent, bright VR: 3V	8	–	–	V
	BR2	Quiescent, bright VR: 6V	5.8	6.3	6.8	V
	BR3	Quiescent, bright VR: 9V	–	–	4.5	V
Frequency Characteristic	f		–	10	–	MHz
DC Transmission	$R_{DC}$	Stair step signal	–	100	–	%

### Pin Connection Diagram

VT Input	1	30	VZ/+31V
VOL Input	2	29	VT Output
AFS Switch	3	28	V <sub>CC3</sub>
Band Input 1	4	27	Band Output 1
Band Input 2	5	26	Band Output 2
RM Output	6	25	V <sub>CC1</sub>
F2	7	24	Band Output 3
PH	8	23	Band Output 4
T	9	22	VOL Output
GND 2	10	21	AFS
RM Input	11	20	GND 1
F1	12	19	RLY Control Output
RLY Control	13	18	AC Input
RST Output	14	17	Clock Output
+5V Output	15	16	V <sub>CC2</sub>

